

CLAIMS

What is claimed is:

5 1. A conductive polymer composition comprising at least one polymer and at least one carbon black having an STSA of from about 10 to about 200 m²/g, an I₂No of from about 15 to about 250 mg/g, a tinting strength of about 130% or less, a DBPA of from about 20 to about 450 cc/100g, a CDBP of from about 20 to about 400 cc/100g, a ratio of I₂No to STSA of from about 0.4 to about 2.5, a mean particle size of from about 14 to about 250 nm, and a 10 %volatiles of less than about 1.0%, wherein the carbon black comprises from about 5 to about 40% by weight of the conductive polymer composition, and wherein the conductive polymer composition has a volume resistivity of greater than about 100 ohm-cm at room temperature.

15 2. The conductive polymer composition of claim 1, wherein the carbon black has an STSA of from about 20 to about 100 m²/g, an I₂No of from about 20 to about 100 m²/g, a DBPA of from about 50 to about 300 cc/100g, and a CDBP of from about 45 to about 250 cc/100g.

20 3. The conductive polymer composition of claim 1, wherein the carbon black has an STSA of from about 20 to about 70 m²/g, an I₂No of from about 20 to about 75 m²/g, a DBPA of from about 100 to about 250 cc/100g, and a CDBP of from about 60 to about 175 cc/100g.

25 4. The conductive polymer composition of claim 1, wherein the carbon black is present in an amount from about 15 to about 30% by weight of the polymer composition.

5. The conductive polymer composition of claim 1, wherein the carbon black is present in an amount of from about 25 to about 40% by weight of the polymer composition.

30 6. The conductive polymer composition of claim 1, wherein the conductive polymer composition has a volume resistivity of greater than about 1000 ohm-cm at room temperature.

7. A conductive polymer composition comprising at least one polymer and at least one carbon black having an STSA of from about 10 to about 200 m²/g, an I₂No of from about 15 to about 250 mg/g, a tinting strength of about 130% or less, a DBPA of from about 20 to about 450 cc/100g, a CDBP of from about 20 to about 400 cc/100g, a ratio of I₂No to STSA of from about 0.4 to about 2.5, a mean particle size of from about 14 to about 250 nm, and a %volatiles of less than about 1.0%, wherein the carbon black comprises from about 5 to about 40% by weight of the conductive polymer composition.

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8. The conductive polymer composition of claim 7, wherein the carbon black has an STSA of from about 20 to about 100 m²/g, an I₂No of from about 20 to about 100 m²/g, a DBPA of from about 50 to about 300 cc/100g, and a CDBP of from about 45 to about 250 cc/100g.

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9. The conductive polymer composition of claim 7, wherein the carbon black has an STSA of from about 20 to about 70 m²/g, an I₂No of from about 20 to about 75 m²/g, a DBPA of from about 100 to about 250 cc/100g, and a CDBP of from about 60 to about 175 cc/100g.

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10. The conductive polymer composition of claim 7, wherein the conductive polymer composition has a volume resistivity of greater than about 100 ohm-cm at room temperature.

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11. The conductive polymer composition of claim 7, wherein the conductive polymer composition has a volume resistivity of greater than about 1000 ohm-cm at room temperature.

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12. The conductive polymer composition of claim 7, said carbon black having an STSA of from about 46 to about 56 m²/g, an I₂No of from about 60 to about 70 mg/g, a tinting strength of about 70% or less, a DBPA of from about 137 to about 147 cc/100g, a CDBP of from about 85 to about 95 cc/100g, a ratio of I₂No to STSA of from about 1.2 to about 1.4, a mean particle size of from about 37 to about 47 nm, and a %volatiles of less than about 1.0%, wherein the carbon black is present in an amount of from about 25 to about 40% by weight of the polymer composition.

13. The conductive polymer composition of claim 7, said carbon black having an STSA of from about 32 to about 42 m²/g, an I₂No of from about 39 to about 49 mg/g, a tinting strength of about 60% or less, a DBPA of from about 112 to about 122 cc/100g, a CDBP of from about 71 to about 81 cc/100g, a ratio of I₂No to STSA of from about 1.1 to about 1.3, a mean particle size of from about 48 to about 58 nm, and a %volatiles of less than about 1.0%, wherein the carbon black is present in an amount of from about 25 to about 40% by weight of the polymer composition.

5 14. The conductive polymer composition of claim 7, said carbon black having an STSA of from about 55 to about 65 m²/g, an I₂No of from about 63 to about 73 mg/g, a tinting strength of about 90% or less, a DBPA of from about 121 to about 131 cc/100g, a CDBP of from about 85 to about 95 cc/100g, a ratio of I₂No to STSA of from about 1.05 to about 1.25, a mean particle size of from about 26 to about 36 nm, and a %volatiles of less than about 1.0%, wherein the carbon black is present in an amount of from about 25 to about 40% by weight of the polymer composition.

10 15. The conductive polymer composition of claim 7, said carbon black having an STSA of from about 64 to about 74 m²/g, an I₂No of from about 72 to about 82 mg/g, a tinting strength of about 90% or less, a DBPA of from about 188 to about 198 cc/100g, a CDBP of from about 20 101 to about 111 cc/100g, a ratio of I₂No to STSA of from about 1.05 to about 1.25, a mean particle size of from about 34 to about 44 nm, and a %volatiles of less than about 1.0%, wherein the carbon black is present in an amount from about 25 to about 40% by weight of the polymer composition.

25 16. The conductive polymer composition of claim 1, wherein the carbon black is a modified carbon black comprising the carbon black having attached at least one organic group.

17. The conductive polymer composition of claim 1, wherein the carbon black is treated with a binder resin.

18. The conductive polymer composition of claim 1, wherein the polymer comprises a polyolefin, a vinylhalide polymer, a vinylidene halide polymer, a perfluorinated polymer, a styrene polymer, an amide polymer, a polycarbonate, a polyester, a polyphenyleneoxide, a polyphenylene ether, a polyketone, a polyacetal, a vinyl alcohol polymer, a polyurethane, or 5 combinations thereof.

19. The conductive polymer composition of claim 7, wherein the carbon black is a modified carbon black comprising the carbon black having attached at least one organic group.

10 20. The conductive polymer composition of claim 7, wherein the carbon black is treated with a binder resin.

15 21. The conductive polymer composition of claim 7, wherein the polymer comprises a polyolefin, a vinylhalide polymer, a vinylidene halide polymer, a perfluorinated polymer, a styrene polymer, an amide polymer, a polycarbonate, a polyester, a polyphenyleneoxide, a polyphenylene ether, a polyketone, a polyacetal, a vinyl alcohol polymer, a polyurethane, or a combination thereof.

20 22. An article comprising the conductive polymer composition of claim 1.

23. An article comprising the conductive polymer composition of claim 7.

24. An article comprising the conductive polymer composition of claim 12.

25 25. An article comprising the conductive polymer composition of claim 13.

26. An article comprising the conductive polymer composition of claim 14.

27. An article comprising the conductive polymer composition of claim 15.

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28. The article of claim 22, wherein the article is a component of an automobile fuel system.

29. The article of claim 22, wherein the article is electrostatically painted.

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30. The article of claim 23, wherein the is a component of an automobile fuel system.

31. The article of claim 23, wherein the article is electrostatically painted.

10 32. A method of electrostatic painting an article comprising forming an article comprising the conductive polymer composition of claim 1 and coating at least a portion of said article by electrostatic painting.

15 33. A method of electrostatic painting an article comprising forming an article comprising the conductive polymer composition of claim 7 and coating at least a portion of said article by electrostatic painting.